the sleeve 224 is received, a flat portion 243, and a slot 244 in the flat portion 243. As shown by Figure 8B, the flat section 229 of the shaft 224 faces the flat portion 243 of the lock bearing 240 in an unlocked position to allow the lock bearing 240 to slide along the shaft 224. Figure 8C illustrates the shaft 224 and the lock bearing 240 after the shaft 224 has been rotated by 90°. As shown in Figure 8C, at least one of the truncated annular teeth 227 is received in the slot 244 to prevent the lock bearing 240 from moving axially along the shaft 224.

In the Claims:

Following is a complete listing of the claims pending in the application, as amended:

1-34. (Cancelled)

35. (Amended) A machine for processing microelectronic devices, comprising:

a receiving station having a platform with a tray singulator and a mounting element;

a removable tray retainer configured to hold a tray stack, the tray retainer having a guide structure including a first guide section and a second guide section, a cross-member extending at least partially between and transverse to the first and second guide sections, and a moveable retaining element spaced apart from the cross-member, the retaining element being moveable between a storage position in which the retaining element obstructs a load/unload path through the guide structure and a load/unload position in which the retaining element does not obstruct the load/unload path and also engages the mounting element to releasably hold the retainer to the platform; and

a processing station that processes the microelectronic devices.

36. (Amended) The machine of claim 35 wherein the guide structure comprises a frame having a bearing plate with a first end and a second end, a plurality of elongated L-shaped channel members attached to the first and second ends of the

bearing plate, and panels attached to the channel members and/or the bearing plate, the channel members including first and second channel members attached to the first end of the bearing plate defining the first guide section and third and fourth channel members attached to the second end of the bearing plate defining the second guide section, wherein the channel members project from the bearing plate in the direction of the load/unload path, and the first channel member faces the third channel member and the second channel member faces the fourth channel member.

37. (Amended) The machine of claim 35 wherein:

the first guide section comprises a first C-shaped channel member, and the second guide section comprises a second C-shaped channel member; and

the cross-member comprises a plate having a first end attached to the first C-shaped channel member and a second end attached to the second C-shaped channel member.

38. (Amended) The machine of claim 35 wherein:

the first guide section comprises a first C-shaped channel member, and the second guide section comprises a second C-shaped channel member;

the cross-member comprises a plate having a first end attached to the first C-shaped channel member and a second end attached to the second C-shaped channel member; and

the retaining element comprises a tab projecting into a cavity between the first and second C-shaped channel members in the storage position.

39. (Amended) The machine of claim 35 wherein:

the first guide section comprises first and second L-shaped channel members, and the second guide section comprises third and fourth L-shaped channel members; and

the cross-member comprises a plate having a first end attached to the first and second L-shaped channel members and a second end attached to the third and fourth L-shaped channel members.

40. (Amended) The machine of claim 35 wherein:

the first guide section comprises first and second L-shaped channel members, and the second guide section comprises third and fourth L-shaped channel members;

the cross-member comprises a plate having a first end attached to the first and second L-shaped channel members and a second end attached to the third and fourth L-shaped channel members; and

the retaining element comprises a tab projecting into a cavity between the first and second L-shaped channel members in the storage position.

41. (Amended) The machine of claim 35 wherein:

the guide structure comprises a unitary shell, and the first guide section is defined by a first end of the shell and the second guide section is defined by a second end of the shell; and

the cross-member comprises a plate attached to the shell.

42. The machine of claim 35, further comprising a lock/release mechanism having an actuator, a shaft having a first end coupled to the retaining element and a second end coupled to the actuator, and a lock bearing attached to the cross-member and slidably receiving the shaft, the actuator rotating to rotate the retaining element between the storage position and the load/unload position and to rotate the shaft between a lock position and a release position relative to the lock bearing, the lock bearing preventing the cross-member from moving along the shaft when the shaft is in the lock position and the retaining element is in the storage position, and the lock bearing allowing the cross-member to move along the shaft when the shaft is in the release position and the retaining element is in the load/unload position.

43. The machine of claim 35, further comprising a lock/release mechanism having an actuator and a shaft coupled to the actuator, the actuator having a drive cylinder and a belt contacting the drive cylinder, and the shaft having a through-

pin including a first end coupled to the belt and a second end attached to the retaining element, a key attached to the through-pin proximate to the second end, and a sleeve having a bore receiving the through-pin and a slot receiving the key, wherein rotation of the drive cylinder rotates the through-pin and the sleeve to move the shaft between a lock position in which the retaining element is in the storage position and a release position in which the retaining element is in the load/unload position.

44. (Amended) The machine of claim 35 wherein:

the guide structure comprises a frame having a bearing plate and a plurality of channel members including at least a first channel member projecting from one end of the bearing plate and a second channel member projecting from another end of the bearing plate, the first channel member defining the first guide section of the guide structure and the second channel member defining the second guide section of the guide structure;

the retaining element comprises a tab; and

the tray retainer further comprising a lock/release mechanism having an actuator, a shaft coupled to the actuator, and a lock bearing slidably receiving the shaft and attached to the cross-member, wherein movement of the actuator to a first position moves shaft to a lock position in which the lock bearing engages the shaft to prevent the cross-member from moving along the shaft and in which the tab projects into a space between the first and second channel members in the storage position, and wherein movement of the actuator to a second position moves the shaft to a release position in which lock bearing disengages the shaft to allow the cross-member to move along the shaft and in which the tab is at least partially removed from the space between the first and second channel members in the load/unload position.

45. The machine of claim 35, further comprising a lock/release assembly including:

a lock bearing attached to the cross-member, the lock bearing having a hole;

a shaft extending in the direction of the load/unload path, the shaft being slidably and rotatably received in the hole of the lock bearing, wherein at least one of the lock bearing and the shaft rotates between a lock position and a release position; and

an engagement assembly having an engagement element, a contact surface and a release surface, the engagement element being coupled to one of the shaft or the lock bearing, and the contact surface and the release surface being on the other of the shaft or the lock bearing, the contact surface being configured to contact the engagement element and prevent axial movement between the lock bearing and the shaft in the lock position, and the release surface being configured to be spaced apart from the engagement element and allow axial movement between the lock bearing and the shaft in the release position.

46. The machine of claim 45 wherein:

the shaft comprises a contoured elongated member having a flat section defining the release surface and a rounded outer section defining the contact surface, the rounded outer section having a curved outer surface with a diameter to fit within the hole of the lock bearing; and

the lock bearing comprises a hub having a cylindrical hole, an interior groove with in the hole, and a resilient member defining the engagement member in the groove, the flat section being juxtaposed to the resilient member in the release position and the outer section contacting the resilient member in the lock position.

47. The machine of claim 45 wherein:

the shaft comprises an elongated member having a flat section defining the release surface and a plurality of truncated annular teeth defining the contact surface; and

the lock bearing comprises a hub having a cylindrical hole, a flat portion, and a slot in the flat portion defining the engagement element, the flat section of the shaft being juxtaposed to the flat portion of the lock bearing in the release position and at least one of the annular teeth being in the slot in the lock position.

48. (Amended) A machine for processing microelectronic devices, comprising:

a stack of trays, each tray carrying a plurality of microelectronic devices;

a receiving station having a platform with a tray singulator and a mounting element, the tray singulator being configured to selectively separate and retain a single tray from the stack of trays;

a portable tray retainer configured to hold the stack of trays, the tray retainer being releasably attached to the receiving station and the tray retainer including a casing and a plurality of retaining elements, wherein the casing includes a guide structure with a first end spaced apart from the receiving station and a second end proximate to the receiving station, a cross-member extending across at least a portion of the guide structure at least proximate to the first end, and an opening at least proximate to the second end through which the trays can pass into or out of the casing, wherein the retaining elements are positioned proximate to the opening and are moveable between a storage position and a load/unload position, the retaining elements projecting into the guide structure in the storage position to hold the trays in the retainer, and at least a portion of the retaining elements projecting away from the guide structure and engaging a corresponding mounting element of the receiving station in the load/unload position to allow the trays to pass through the opening and to releasably hold the retainer to the receiving station, and wherein the cross-member is moveably positioned in the casing to move along a load/unload path to push a bottom tray of the tray stack against the retaining elements when the retaining elements are in the storage position and to drive the bottom tray out of the casing to the singulator when the retaining elements are in the load/unload position; and

a processing station that processes microelectronic devices on trays that have been unloaded from the retainer.

49-63. (Cancelled)

64. (New) A machine for processing microelectronic devices, comprising:

a removable tray retainer comprising:

a first guide;

a second guide;

a cross-member extending at least partially between the first and second guides and slidable with respect to the first and second guides along a load/unload path of the retainer; and

a moveable retaining element spaced a variable distance apart from the cross-member, the retaining element being moveable between a storage position in which the retaining element obstructs movement of a tray along the load/unload path and a load/unload position in which the retaining element does not obstruct movement of the tray along the load/unload path;

a receiving station having a mounting element cooperating with the retainer to hold the retainer when the retaining element is in the load/unload position and release the retainer when the retaining element is in the storage position; and

a processing station associated with the receiving station and adapted to process the microelectronic devices.

65. (New) The machine of claim 64 wherein the retaining element of the retainer engages the mounting element of the receiving station when the retaining element is in its load/unload position.

66. (New) The machine of claim 65 wherein the retaining element of the retainer does not engage the mounting element of the receiving station when the retaining element is in its storage position.

67. (New) The machine of claim 64 wherein the retaining element comprises a tab projecting into a cavity between the first and second guide members in the storage position.

68. (New) The machine of claim 64 wherein the first guide comprises a first C-shaped channel member, and the second guide comprises a second C-shaped channel member.

69. (New) The machine of claim 64 wherein the first guide comprises first and second L-shaped channel members, and the second guide comprises third and fourth L-shaped channel members.

70. (New) The machine of claim 64 wherein the cross member includes a lock bearing and the retainer further comprises a shaft coupled to an actuator, the lock bearing slidably receiving the shaft, the actuator having a first position, in which the lock bearing engages the shaft to prevent the cross-member from moving along the shaft, and a second position, in which the cross-member is permitted to move along the shaft.

71. (New) The machine of claim 70 wherein the retaining element is in its storage position when the actuator is in its first position and the retaining element is in its load/unload position when the actuator is in its second position.

72. (New) The machine of claim 70 wherein the retaining element comprises a tab carried by the shaft, the tab projecting into a space between the first and second guides in the storage position, and the tab being at least partially removed from the space between the first and second guides in the load/unload position.

73. (New) The machine of claim 70 wherein the retaining element is coupled to the actuator such that movement of the actuator to its first position moves the retaining element to its storage position and movement of the actuator to its second position moves the retaining element to its load/unload position.

74. (New) The machine of claim 64, further comprising a lock/release mechanism having an actuator and a shaft coupled to the actuator, the actuator having a drive cylinder and a belt contacting the drive cylinder, and the shaft having a through-pin including a first end coupled to the belt and a second end attached to the retaining element, a key attached to the through-pin proximate to the second end, and a sleeve

having a bore receiving the through-pin and a slot receiving the key, wherein rotation of the drive cylinder rotates the through-pin and the sleeve to move the shaft between a lock position in which the retaining element is in the storage position and a release position in which the retaining element is in the load/unload position.

75. (New) The machine of claim 64 further comprising a lock/release assembly including:

a lock bearing attached to the cross-member, the lock bearing having a hole;

a shaft extending in the direction of the load/unload path, the shaft being slidably and rotatably received in the hole of the lock bearing, wherein at least one of the lock bearing and the shaft rotates between a lock position and a release position; and

an engagement assembly having an engagement element, a contact surface and a release surface, the engagement element being coupled to one of the shaft or the lock bearing, and the contact surface and the release surface being on the other of the shaft or the lock bearing, the contact surface being configured to contact the engagement element and prevent axial movement between the lock bearing and the shaft in the lock position, and the release surface being configured to be spaced apart from the engagement element and allow axial movement between the lock bearing and the shaft in the release position.

76. (New) The machine of claim 75 wherein:

the shaft comprises a contoured elongated member having a flat section defining the release surface and a rounded outer section defining the contact surface, the rounded outer section having a curved outer surface with a diameter to fit within the hole of the lock bearing; and

the lock bearing comprises a hub having a cylindrical hole, an interior groove with in the hole, and a resilient member defining the engagement member in the groove, the flat section being juxtaposed to the resilient member in the release position and the outer section contacting the resilient member in the lock position.

77. (New) The machine of claim 75 wherein:

the shaft comprises an elongated member having a flat section defining the release surface and a plurality of truncated annular teeth defining the contact surface; and

the lock bearing comprises a hub having a cylindrical hole, a flat portion, and a slot in the flat portion defining the engagement element, the flat section of the shaft being juxtaposed to the flat portion of the lock bearing in the release position and at least one of the annular teeth being in the slot in the lock position.